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REMARKS

The Office Action of March 2, 2005 has been carefully considered.

Applicant acknowledges the allowance of claims 26-28, representing alloys for which test results are available in the specification.

Claim 16 has now been amended to recite the alloy composition. The amount of each component recited in claim 16 was taken from claim 22 which has now been canceled, with the exception of the Zn content. The lower limit of the Zn content recited in claim 16 represents the lower limit of the Zn content of AA7049, which is one of the alloys recited in claim 23. To establish this content (which is not specifically disclosed in the specification), Applicant submits herewith the relevant "Teal Sheet" pages from the Aluminum Association, "International Alloy Designations and Chemical Composition Limits for Wrought Aluminum and Wrought Aluminum Alloys." The particular sheets submitted herewith were published in April 2004, but represent the state of the art at the time that the present application was filed.

Claim 23 has been amended to delete those alloys which contain less than 7.2 wt.% zinc, which can be seen in the relevant "Teal Sheet" pages.

Claims 16 through 25 remain rejected under 35 USC 103(a) over Miyasato et al in view of ASM Vol. 15 Casting, and also over Shahani in view of ASM Vol. 15 Casting.

The claimed alloys are now outside of the ranges disclosed by Miyasato et al, in which the amount of Zn is 5.2-6.8 wt.%. The claimed alloy of claims 16-25 and the alloys of the reference are not, therefore, substantially identical in composition.

The statement in the Office Action that it would have

been obvious to add Ti and B to the alloy taught by Miyasato in order to obtain a *finer* grain structure is contrary to the teachings of the invention, which essentially calls for a coarser grain structure than has been known in the art. The Office action makes reference to page 477, column 3 of the ASM reference, which discloses two embodiments, one in which the alloy contains 0.05 to 0.15% Ti + 0.04% B, and a second, speciSfically cited in the Office Action, in which the alloy contains 0.01% to 0.08% Ti + 0.003% B. In the first case, the Ti/B ratio is between 0.8 and 3, and in the second case, the Ti/B ratio is between 3.3 and 26.7. The reliance of the Office Action on the second case is apparent from ASM Figure 68, a schematic drawing showing grain size versus Ti/B ratio for several Al alloys.

For alloys where there is a grain size minimum, such as the AA3004 alloy and the 99.7% Al alloy, a Ti/B ratio of about 3 (the first case) is used to obtain the minimum grain size. Where there is no minimum grain size, such as the AA7050 alloy, the second case on page 477 is applicable to reduce grain size, which is decreased continuously as Ti/B is increased. However, the AA7050 alloy with a Ti/B ratio between 3.3 and 26.7 results in a grain size well below 300 microns, on the order of about 260 microns maximum. Thus, the ASM document taken as a whole does not teach exceeding a grain size greater than about 260 microns.

Moreover, as has been previously noted, the ASM document contains a clear teaching that the desired grain size is generally 200 microns or finer in certain cases, which does not encourage one of ordinary skill in the art to choose a Ti/B ratio (the only parameter that acts on grain size according to ASM) such that a coarse grain size is obtained, as is presently claimed.

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Shahani et al has also been cited for its teaching of a partially recrystallized AlZnMgCu alloy product and the Office action alleges that it would have been obvious to utilize grain refining elements as taught in the ASM reference to obtain a finer grain structure within the claimed 300 to 800 μm range. However, as noted above, the cited reference provides no motivation for doing so. The sole motivation for using the as cast grain size and recrystallization fraction to obtain a characteristic intercept distance greater than 250 μm is the teaching of the invention that obtaining the claimed characteristic intercept distance results in improved fracture toughness.

Withdrawal of these rejections is accordingly requested.

In view of the foregoing amendments and remarks, Applicant submits that the present application is now in condition for allowance. An early allowance of the application with amended claims is earnestly solicited.

Respectfully submitted,

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